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# Innovation Mobs – Unlocking the Innovation Potential of Virtual Communities

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## ABSTRACT

This paper investigates design elements for innovation contests in order to unlock the innovation potential of temporary virtual communities. Open innovation in general and particularly innovation contests have recently received considerable attention in research. Still, there has been mostly generic theorizing on the design of innovation contests to foster innovative output. Findings from an in-depth case studies in the shoe industry reveal a design with two players, the organizer and the potential participants, a temporarily very active virtual community which we denote ‘innovation mob’. With our paper, we contribute to the fields of virtual communities and open innovation by proposing a systematic approach, structured along five stages, from preparation to follow-up.

## KEYWORDS

Innovation contest, community, open innovation

## INTRODUCTION

There is empirical evidence that in many markets innovation is initiated by consumers or users (e.g. Luethje and Herstatt, 2004; Ogawa and Piller, 2006; von Hippel, 1978). Previous research has shown that manufacturers can profit from consumers' innovative potential by involving them in new product development (e.g. Franke et al., 2006; Fueller et al., 2006). In doing so, companies face two basic challenges. On the one hand, the *innovation process* must be open and flexible, allowing for the integration of external knowledge and innovative concepts (Chesbrough, 2003; von Hippel, 1988). On the other hand, understanding *innovators* - i.e. innovative external partners - and their motivational schemes is necessary to successfully identify and integrate them (Lakhani and Wolf, 2005; von Hippel and von Krogh, 2006).

Beginning with the *innovation process*, the integration of external knowledge requires a change in perspective. Traditionally, new product development has been the task of manufacturers. During the last decades, this perception of innovative activity has been changed. It can be observed that manufacturers *as well as* consumers and suppliers act as innovators (Chesbrough, 2003, 2004; von Hippel 1978, 1988). Establishment of a suitable, typically webbased environment for such open innovation processes (the process to combine external and internal competences in the innovation process by use of different methods) can enhance innovative performance in terms of time-to-market and cost-to-market (Piller and Walcher, 2006). To realize open innovation, companies can use a number of tools, e.g. lead user method (Luethje and Herstatt, 2004), toolkits (Franke and Piller, 2004; von Hippel, 2001), communities (Franke and Shah, 2003; Fueller et al., 2006) or innovation contests (Piller and Walcher, 2006). Generally, an innovation contest (also known as idea competition) is a forum in which innovators from all over the world can submit innovative concepts on account of a specific topic defined by the organizer of the contest. Whereas innovation contests have continuously gained in importance as a corporate practice, a deep understanding of this instrument is still lacking. Contrary to other methods used to realize open innovation, extant research displays only a limited number of (English) publications on the topic (Ebner et al. 2008; Haller et al., 2009; Piller and Walcher, 2006; Ogawa and Piller, 2006). Consequently, this paper addresses the method of innovation contests as means to open the innovation process.

Secondly, understanding of external *innovators*, i.e. participants in open innovation processes, necessitates knowledge on the motivation, behavior and benefits of this group. The potential participants need to be meticulously identified and integrated according to their preferences to make open innovation a success (Franke et al., 2006; Fueller et al., 2006). User innovation is often realized by a (single) company which cooperates with a group of interested, motivated and knowledgeable users in a particular virtual setting. Innovation contests, set up on platforms with community supporting features, have recently been

shown to be a suitable means to motivate external innovators (Ebner et al., 2008; Haller et al., 2009; Piller and Walcher, 2006). This instrument can be used with two kinds of innovative groups: The first kind of innovative group is an existing, active *community* (Piller and Walcher, 2006). In this case, corporate brand, products, and consumption activities have been reasons of establishment of and identification with the community (Franke and Piller, 2004; Fueller et al., 2006). The second kind is an (initially) *unrelated group* of innovators. The cases of threadless.com and innocentive.com exemplarily illustrate the innovative potential of such a globally distributed innovative group. Threadless.com is a fashion company which entirely bases its business model on user input, while innocentive.com provides a platform where companies can run contests for research questions (Haller et al., 2009; Ogawa and Piller, 2006). For participating innovators, *enjoyment*, i.e. fun, creativity, exploration and competence (Deci et al., 1999); completion of a *challenging task and pride* in the result (Piller and Walcher, 2006); as well as an increase of *social reputation* among peers and potential employers (Harhoff et al., 2003) have been found to be important motivators. Such a virtual innovation community is deliberately established and temporarily very active during the runtime of the innovation contest. It can, but need not be transformed into a stable, persistent virtual community of innovators. While research has gathered broad insight into virtual user innovation communities (Franke and Shah, 2003; Fueller et al., 2006; Lakhani and von Hippel, 2002), we still lack knowledge on account of such temporarily active and innovative communities and according possibilities to activate, interact and innovate with their support. As a result, this paper addresses the innovation potential of a temporary virtual community of innovators which we call an ‘innovation mob’.

Bringing together our interest in innovation contests and temporary virtual communities, this paper explores the overall research question:

“How to design an innovation contest to unlock the innovation potential of a temporary virtual community of innovators?”

We address this question by an in-depth case study with multiple data sets in the still rather traditional industry of European shoe manufacturing. The examined innovation contest, the “CEC Shoe Design Contest” ([www.cec-codesign.net](http://www.cec-codesign.net)), was part of an online platform collaboratively developed by practitioners and researchers to enable the integration of users in the innovation process of shoe manufacturers. This paper investigates the design elements which have been identified to be most relevant to *organizers of innovation contests*: organisational details and the interplay of organizer and participants. Technical details of design, development and maintenance are hence not presented.

## THEORETICAL BACKGROUND

### Innovation Contests

An innovation contest begins with an unambiguous formulation of a contest topic by the organizer (McWilliam, 2000; Ebner et al., 2008), which can be companies as well as non-profit organizations, e.g. museums (Walcher, 2006). The topic needs to indicate the desired area of innovation (e.g. shoe design) and defines specificity and necessary degree of elaboration – e.g. ideas expressed by text only or full prototypes (Piller and Walcher, 2006; Ebner et al., 2008).<sup>1</sup>

With topic definition, the organizer implicitly defines the interesting target group of innovators. Already during announcement, innovators’ expected benefits in comparison to their cost of participation need to be considered (Piller and Walcher, 2006). Participation to innovation contests follows a process of self-selection, rooting in both, intrinsic and extrinsic motivation. Intrinsically motivated consumers participate in an innovation contest because this is to them stimulating, involves fun, creative urge and satisfaction (Fueller, 2006; Lakhani and Wolf, 2005). Extrinsic motivation to participate in a design contest is often driven by an unsatisfied need and expectation of benefit from the resulting product (von Hippel, 1986). Consequently, the organizer has to establish a rewarding system to enhance motivation of the target group, which is often granted in exchange for the right to exploit the solution (Piller and Walcher, 2006). Prices range from monetary awards to part-time jobs with the organizing companies. As typically only the best contributions are rewarded, the competitive character induces top performance in terms of creativity and quality of submissions (Ernst et al. 2004; Hayek, 1948). For webbased contests, the development of an online platform is an initial activity, too. Piller and Walcher (2006) list three characteristics essential to such platforms: support of participants’ creativity and enrichment of their imagination, e.g. by provision of scenarios; increase of efficiency for both, participant and organizer, e.g. by an easy submission system; and third, provision of community functionality, e.g. by features for peer evaluation and commenting (Fueller et al., 2006).

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<sup>1</sup> We use the term innovation contest to go beyond the often used “idea contest” and represent the magnitude of possible submissions (from pure ideas to fully developed products/ services) which are allowed at many currently running contests (Haller et al. 2009).

Once the platform is established, marketing is necessary to announce the innovation contest to interested users and motivate them to participate (Ernst et al., 2004; Piller and Walcher, 2006). If marketing has been successful, interested persons appear and register on the platform (if a new community is established) or begin activity (if an existing community is used) by submission of innovative concepts, commenting, discussion, and further development of ideas. In this stage, the organizer needs to provide continuous support for participants, e.g. when they submit a contribution (Jeppesen, 2005). Mentoring of new participants as well as continuous improvement of the platform, e.g. publication of frequently asked questions and answers, have been found to nurture initial participation (Nonnecke, et al. 2006). To provide this support not only by the organizer, but by peer participants, literature recommends community functionalities. Thus, information exchange, topic related discussion, and collaborative design of products can be enhanced (Fueller, 2007; Piller et al., 2005). As a side effect, supporting activities stimulate involvement, trust and commitment within the community. These emotions are important as they foster communication on the innovative concepts and simultaneously help to establish and maintain the evolving community (McWilliam, 2000).

After closing of the contest, evaluation of the submissions begins. Evaluation is in most cases solely done by a jury of experts, but organizers increasingly encourage the community to informally comment or formally vote on existing submissions (Ogawa and Piller, 2006, Haller et al., 2009). Thereby, the organizer sees peer evaluation of an individual submission as well as general opinion trends within the community (Nambisan, 2002). Proceeding of expert evaluation is far from being standardized. Sometimes, gut feeling or criteria from idea management are used (Schachtner, 2001), other organizers prescribe innovation specific criteria like “feasibility” which captures the possibility of transforming an idea into a commercial product (Kristensson et al., 2004); and “task / topic alignment” reflecting if and how far an idea fits the desired field of innovation (Fueller et al., 2006; Walcher, 2006). No matter if and which criteria are used, the jury of experts assesses the quality of submissions, compiles a ranking and determines the contest winners to receive the awards.

### **Virtual Innovation Communities**

User innovation communities are meaning nodes consisting of individuals who communicate face-to-face or via electronic communication (von Hippel, 2005). Information and communication technology enable virtual, i.e. online user communities (Johnson, 2001). Modern architectures for virtual communities comprehend various webbased applications which support communication and interaction as well as collaborative development of innovations, i.e. a product of value to the entire community (Franke and Shah, 2003; Leimeister and Krcmar, 2006).

Virtual communities are not homogeneous; they are often specialized, featuring intense occupation with certain topics, products, and consumption activities and differ concerning domain, purpose and benefits (e.g. Fueller et al., 2006; Lakhani and Wolf, 2005; Leimeister and Krcmar, 2006). Innovative activity is frequent in these communities (Franke and Shah, 2003). Extant research shows that user innovators frequently receive content, reviews, and recommendations from others in the community; this *user-to-user assistance* is possible as user innovations are ‘freely revealed’ and thus become publicly available (Harhoff et al., 2000; von Hippel and von Krogh, 2006). User-to-user assistance bases on the commonalities of community members. They intensively collaborate and contribute to each others' problem solving process; resulting loops of trial and error lead to improved and accelerated target achievement (Franke and Shah, 2003; Lakhani and von Hippel, 2003). For the company cooperating with the community, free revealing is a decisive benefit: it allows identification of innovative concepts (Harhoff et al. 2003) and their originators who can be integrated into further innovation activities (Luethje and Herstatt, 2004).

Manufacturers can cooperate with two kinds of virtual communities: existing user-initiated and newly founded virtual communities. Fueller et al. (2006) recommend profiting from the innovative potential of existing user-initiated online communities. However, relying on an (initially) *unrelated group* of innovators and founding a (temporary) community can amplify the prospects of profit because of wider reach to a globally distributed innovative group, greater control, more direct contact to users and more intensive interaction. Within the field of information systems research, the design aspects required to establish and maintain such a (temporary) virtual community for innovative purposes, i.e. an ‘innovation mob’ is interesting. From extant knowledge in the field of open innovation, we assume that organization of an innovation contest might be a suitable means. Hence, this paper focuses on newly founded virtual communities in the context.

### **RESEARCH APPROACH**

The applied research approach is characterized by collection of multiple data sets and cross-examination of results in order to gain “a more detailed and balanced picture of the situation” (Altrichter et al., 1996). Data sets encompass ten semi-structured interviews with representatives from the organizing companies (thereof 6 face-to-face and 4 via telephone), a webbased survey among contest participants (n=31), activity logfiles (six months), and observation of organizers as well as participants

while interacting with the platform. The database of platform allowed an automated record of user registrations, submissions, votings and comments. This data has been used to study activity on the platform and to identify when which action took place. Our text analysis followed the content analysis procedures to code the data (Mayring, 2002). The interpretative approach to data analysis was supported by Atlas.ti (Lindsay, 2004). Survey data and activity details of the platform were statistically analyzed with SPSS.

## FINDINGS

The “CEC Shoe Design Contest” was run between October and December 2007. Supported by five companies from the shoe sector, the contest invited all interested parties to submit to the topic “Original Origin”. In total, 63 highly innovative designs have been submitted. The network of registered users consists of about 400 members from nearly 50 countries. The winning designs have been prototyped in 2008. Evaluation of our data showed that ‘out of the void’, i.e. from an initially unrelated group, a temporarily very active community of innovators in the shoe sector sprang up. We measured the community's activity (i.e. submissions, comments and votings) over the three months of the innovation contest as well as the subsequent three months. We found sparse activity in the beginning. Towards the end of the contest submission phase, all measures of the community's activity strongly increase and finally reach their overall peaks. Following, the virtual community shows its temporality: all three activities are declining remarkably. Submissions drop from 58 during the second half of December to 3 during the first half of January. As from one month after the contest's end, only minimal counts of activity can be registered. Seemingly, expiration of the 'contest factor' made the once so active community inactive. This is the reason why we propose the term ‘innovation mob’ to describe this particular type of virtual community. We suggest the term in accordance to the political groups of ‘flashmobs’ (McFedries, 2003). Alike the participants of a flashmob, the participants of an innovation contest are initially unrelated, come (seemingly) out of the void, are temporarily very active and communicative and then stop their activities and disappear again.

To unlock the potential of an innovation mob by an innovation contest, we learned that a systematic approach is necessary. Our data suggest designing an innovation contest with *two players*, the *participants of the innovation mob* (shortly called innovation mob from now on) and the *organizer*, in the broad sense the term is used by extant literature (Walcher, 2006). Furthermore, design of the innovation contest should be along *five phases*: preparation, communication, execution, evaluation and follow-up. More general, the contest can be designed along a *trisected timeline*, constituted by warm up (i.e. preparation), run time (i.e. communication, execution and evaluation by the innovation mob) and cool down (i.e. evaluation by organizer and follow up). Figure 1 shows our systematic approach to design an innovation contest.

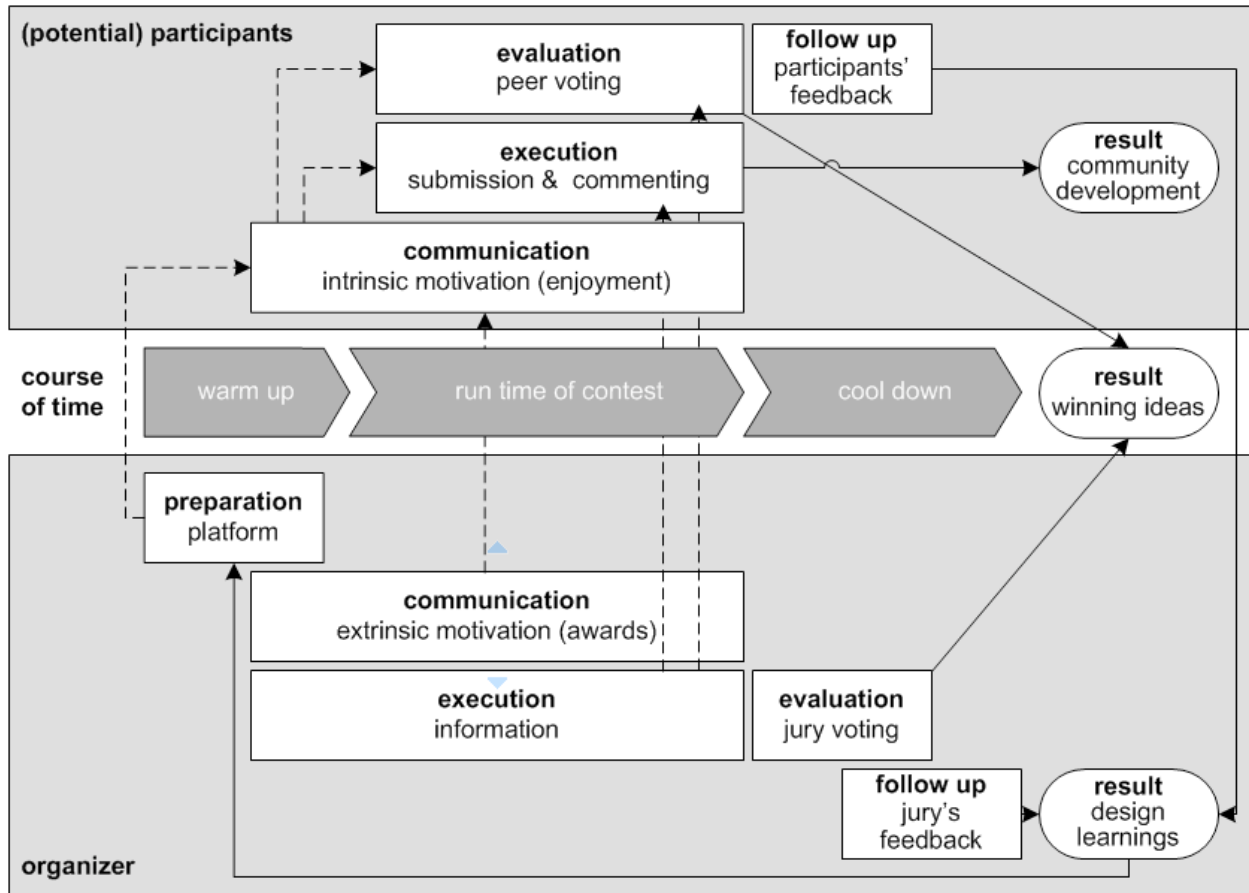


Figure 1: Systematic approach to design innovation contests

*Preparation* is the conceptual stage when the platform is designed, prototyped, developed, and tested. During this phase, our data show the crucial importance to design an user interface which is attractive to the target group of participants as well as easy to use. For the CEC Shoe Design Contest, collaboration of university partners, a specialized service provider and practitioners led to the online platform. Our data shows that design and development of the platform should better be outsourced to a specialized service provider as the organizing companies lack the systematic knowledge to perform these activities. Hence, we do not go into more detail on *preparation* and the *warm up* stage, but proceed to our findings concerning run time and cool down.

With *communication*, the stage of *run time* starts. At this stage awareness and involvement of (potential) participants is created. It begins with determination of the contest topic and continues until run time of the contest is over. Starting from topic definition, the organizers subsequently specify the target audience. For the CEC Shoe Design Contest, intense occupation with shoe models, exchange with others about the topic, and modification or creation of shoes were regarded as indicators of potentially interesting participants. Secondly, fashion and design schools were determined as contacts to future shoe designers. Once the topic and the target audience are specified, actual communication starts.

Our data shows that communication takes place in the channels the (potential) participants use and address extrinsically motivational aspects. Organizers announced the CEC Shoe Design Contest predominantly via web pages and virtual communities dedicated to topics related to the contest or list different (design) contests. Results from the survey among the innovation mob indicate that 42% of responding participants got to know the contest by a website or forum about contests, additional 26% noticed the contest on websites or forums about design, shoes, fashion or related topics. Nearly a third (32%) of participants got advices from friends or colleagues on the contest. Our data shows that indication of suitable awards is of central importance already at this stage. In the announcements, the awards (targeted to extrinsic motivation) were accentuated – manufacturing of the two winning designs seemed and empirically proved to be a very important motivator (mean 4.45, standard deviation 0.76). States one participant:

“I would like to [...] see my design becoming a wearable shoe.” (user 2987)

Practitioners estimate extrinsic aspects to be predominant; they suppose that a majority of participants is driven by the possibility to get known (and possibly employed) by the organizing company. They hence suggest internships in design departments as well as monetary prizes to be suitable awards. Our data from the survey among the innovation mob, however, shows that intrinsic aspects like fun and enjoyment have driven participation. Enjoyment, tested by different items (“designing a shoe was fun” (mean 4.87, st.dev. 0.34), “being creative was a source of satisfaction for me” (mean 4.87, st.dev. 0.42), as well as “I enjoyed the exercise” (mean 4.77, st.dev. 0.49)), is the strongest factor of motivation in the CEC Shoe Design Contest:

“It was fun and I learned a lot about making shoes.” (user 6443)

“This was really fun and challenging. It really made you think.” (user 3916)

Combining the findings, we propose that communication among (potential) members of the innovation mob focuses more on intrinsic motivation. Initially, though, extrinsic motivation is incited by the organizers’ communication of awards. Consequently, to activate an innovation mob by an innovation contest, we deduce that both, extrinsic as well as intrinsic motivational aspects should be communicated. We suggest that extrinsic motivation is suitable to create awareness and intensify communication among (potential) participants. Intrinsic motivation, on the other hand, results in involvement and thus in participation in the contest.

The duration of the *execution* is equal to the runtime period of the contest. During this period, the organizer monitors submitted contents and provides information to the innovation mob. In the beginning, focus of activity is on information to raise and maintain motivation. Provision of information to the innovation mob has to be considered particularly important as most participants were ‘contest newcomers’, i.e., did not take part in an innovation contest before (61%). Shortly before the deadline, more information on technical and regulatory issues is provided. Information was primarily targeted by three newsletters which gave information on the state of the contest. Fast email response to individual problems was kept up during the runtime of the contest and support of the community with uploading, voting and commenting was provided. Once uploaded, the designs were visible to everybody, and thus were open to commenting and voting by peer participants. Participants enjoyed this possibility to be easily aware of each others’ activities and share their ideas:

“You can see what other people from all over the world are doing.” (user 6442)

“To participate, it’s to give new ideas to the rest of the people and to be glad with that.” (user 7069)

For the *execution* phase of the contest, we find that innovative (submission) and social (commenting, voting) activity of the innovation mob varies. In the early stages, we propose that information of participants is important to maintain interest and motivation. As overall peaks of activity are reached shortly before deadline of the contest, this is a suitable moment to interact with the innovation mob.

During *cool down*, evaluation is done by the jury of experts and feedback is gathered. This feedback is important as it allows learning on the design of the innovation contest. For the CEC Shoe Design Contest, *evaluation* was done by a combined approach of a jury of experts and peer voting. Design experts from the five participating companies formed the jury. They evaluated the shoe designs according to five criteria (design, innovativeness, feasibility, task alignment and overall), each assessed on a five-point Likert scale. Aggregated voting of the innovation mob were included as sixth criterion for submissions that had been voted five or more times.

By a slightly adapted consensual assessment technique (Amabile, 1982), we checked inter-rater reliability; we calculated intra-class correlation coefficients (ICC; in this case equivalent to Cronbach’s alpha). Thereby, we found that while feasibility was satisfactorily (ICC 0.704), task alignment was only weakly inter-correlated (ICC 0.337). Possibly, the jurors came to variant evaluations because they had different perceptions of the contest task. The respective intra-class correlation coefficients concerning the criteria design (ICC 0.642), innovativeness (ICC 0.571) and overall (ICC 0.581) are acceptable. A certain consensus among jury members can hence be approved; the required ICC of 0.7, though, is not reached for each of the criteria. We consider this result nonetheless acceptable, as the small size of the jury accounts for a less balanced result. As it was particularly interesting to see whether peer opinion differed from professional voting’s, we integrated the aggregated voting of the community as a ‘virtual jury member’ in another analysis. Based on the averaged jury evaluation score and the averaged peer rating of each submission, inter-rater reliability of 0.695 resulted. Community voting is hence quite in line with the opinion of the professionals. We estimate the remaining differences to stem from the fact that peer voting indicates interest in the design, willingness to buy a shoe and general trend interest. For the experts, considerations of feasibility or market potential are integrated in opinion building, too.

Combining our findings, we propose for the *evaluation phase* that submissions should be assessed by both, an expert jury and by the community. Peer evaluation is done by indicating overall liking and willingness to buy, the innovation mob delivers user preferences and trend input. The jury of experts evaluates the submissions on account of a number of criteria, including feasibility.

In addition to the jury, our analysis of the CEC Shoe Design Contest shows that also the innovation mob received a follow up. Here, participants were not explicitly asked on their satisfaction, but organizers received a number of emails asking for the next innovation contest, making suggestions for improvement and requiring information on the evaluation.

We consequently propose for the *evaluation stage* to gather feedback from the temporary virtual community during the evaluation activities of the jury. Besides collection of important feedback for the organizer, this measure bridges the waiting period between termination of the contest and announcement of winning designs.

## CONCLUSION

Our study adds to a better understanding of innovation contests by analyzing the behavior of a temporary virtual community, i.e. an innovation mob, as well as the activities of the organizer during the stages which form an innovation contest. It hence has *implications* for the field of virtual communities as well as for the field of open innovation. Our research serves as a *practical guideline* for (innovation) managers to organize innovation contests as well as a first *foundation* for (innovation) researchers to further explore the design of innovation contests to foster innovative output by temporary virtual communities.

The strengths of our study must be tempered with recognition of its *limitations*. Founded in three years of intense occupation with innovation contests in general and shoe design contests in particular, we still build our results on the in-depth examination of one innovation contest. Given the state of knowledge on the design of innovation contests, the method is appropriately chosen. We believe that our in-depth qualitative work provides foundation for future research that can extend our insights about the systematic design of an innovation contest to unlock innovative potential.

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